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# EU-27

# Sanitary / Phytosanitary / Food Safety

# EU Scientific Opinions on Poultry PRT's show no drawbacks

# 2008

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**Report Highlights:**
On April 2, 2008, the European Food Safety Authority (EFSA) published its assessment, titled "Assessment of the possible effect of the four antimicrobial treatment substances on the emergence of antimicrobial resistance." On April 3, the Scientific Committee on Health and Environmental Risks (SCHER) and the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) published their joint opinion, titled "Environmental impact and effect on antimicrobial resistance of four substances used for the removal of microbial surface contamination of poultry carcasses."

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The European Commission (EC) procedure for the approval of four Pathogen Reduction Treatments (PRTs) for poultry processing had stalled as the EC was waiting for the finalization of two additional scientific reviews of the possible effect of poultry PRTs on antimicrobial resistance and their impact on the environment.

**Assessment by EFSA**

On April 2, 2008, the European Food Safety Authority (EFSA) published the Scientific Opinion of the Biological Hazards Panel (BIOHAZ) "Assessment of the possible effect of the four antimicrobial treatment substances on the emergence of antimicrobial resistance[1]". The BIOHAZ Panel concluded that despite a long history of use, there are currently no published data to conclude that the application of chlorine dioxide, acidified sodium chlorite, trisodium phosphate or peroxyacids to remove microbial contamination of poultry carcasses at the proposed conditions of use will lead to the occurrence of acquired reduced susceptibility to these substances. Similarly, it found no published data to conclude that the application of these PRTs to remove microbial contamination of poultry carcasses at the proposed conditions of use will lead to resistance to therapeutic antimicrobials. However, the panel recommended that the Joint AFC/BIOHAZ guidance document on the submission of data for the evaluation of PRTs should be amended to include any data on the potential occurrence of acquired reduced susceptibility to biocides and/or resistance to therapeutic antimicrobials.

SUMMARY

Following a request from European Commission (DG SANCO), the Panel on Biological Hazards was asked to deliver a scientific opinion on the possible effect of four antimicrobial treatment substances on the emergence of antimicrobial resistance.

The scope of this opinion was to assess the possible development of antimicrobial resistance when chlorine dioxide, acidified sodium chlorite, trisodium phosphate and peroxyacids are applied for poultry carcasses decontamination. For the purpose of this opinion, the terms "acquired reduced susceptibility" to the substances used for the removal of meat surface contamination and "resistance to therapeutic antimicrobials" were used. Therefore, acquired reduced susceptibility to the four substances used for the removal of meat surface contamination as well as to other substances including therapeutic antimicrobials has been considered. Abattoir was the end-point of the present scientific opinion.

The BIOHAZ Panel concluded that despite a long history of use, there are currently no published data to conclude that the application of chlorine dioxide, acidified sodium chlorite, trisodium phosphate or peroxyacids to remove microbial contamination of poultry carcasses at the proposed conditions of use will lead to the occurrence of acquired reduced susceptibility to these substances. Similarly, there are currently no published data to conclude that the application of chlorine dioxide, acidified sodium chlorite, trisodium phosphate or peroxyacids to remove microbial contamination of poultry carcasses at the proposed conditions of use will lead to resistance to therapeutic antimicrobials.

Uncertainties originate from the facts that acquired reduced susceptibility to some biocides other than those in question was found followed improper use of biocides. In addition, most of the evidence on acquired reduced susceptibility to some biocides other than those in question was derived from laboratory-based experiments.

[1] http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1178697425124.htm

The Joint AFC/BIOHAZ guidance document on the submission of data for the evaluation of the efficacy of substances for the removal of microbial surface contamination of foods of animal origin should be amended. The BIOHAZ Panel recommended that any data on the potential of occurrence for acquired reduced susceptibility to biocides and/or resistance to therapeutic antimicrobials should be included. Research on the likelihood of emergence of acquired reduced susceptibility to substances used for the removal of the microbial surface contamination of foods of animal origins and other foods and resistance to therapeutic antimicrobials should be encouraged.

**Key words:** chlorine dioxide, acidified sodium chlorite, trisodium phosphate, peroxyacids, antimicrobial resistance, poultry decontamination

**Opinion from SCHER and SCENIHR**

On April 3, 2008, the Scientific Committee on Health and Environmental Risks (SCHER) and the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) published their joint opinion on "Environmental impact and effect on antimicrobial resistance of four substances used for the removal of microbial surface contamination of poultry carcasses[2]". Again, the SCHER and SCENIHR found no prejudice against the use of PRTs, although a lack of data, especially on the effect of the disposal of for the environment, was highlighted.

## 4. CONCLUSIONS

The environmental impacts associated with the use of these four antimicrobial substances have been assessed for two main scenarios:

1. the disposal of used solutions and leaching waters, and
2. the environmental impacts associated to the presence of residues in the poultry carcasses and their further release under normal use practices.

*The disposal of used solutions*

The impact of the disposal of used solutions at the treatment facilities may be relevant and should be included. Not enough information is available to produce comprehensive quantitative assessments however some general conclusions can be presented:

- The preliminary assessments indicate that the direct discharge of chlorine dioxide and acidified sodium chlorite used solutions may represent a significant risk for the receiving water bodies even after dilution with the slaughterhouse waste waters. The discharge through a Waste Water Treatment Plant (WWTP) may contribute to the overall inflow of chlorine. According to the EU Risk Assessment report (RAR), no risk to the biological processes within the WWTP is expected. The risk for the waters receiving the WWTP effluent would depend on the amount of remaining free chlorine. The environmental relevance is also associated to the WWTP practices, as some facilities include chlorination processes of the effluents.

[2] http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_015.pdf

- In addition to free chlorine, chlorination by-products can be produced due to these treatments. The environmental risk of these by-products cannot be assessed on the basis of the available information.
- Trisodium phosphate used solutions should be managed in order to avoid releases of phosphate into the aquatic environment, with the associated risk of eutrophication. Eutrophication risk assessment models are now available and, once validated, could be used for quantitative estimation after calibration at the local level.
- Peroxyacids used solutions are composed principally of acetic and octanoic acids. The preliminary assessments indicates that the direct discharge of solutions, containing residual amounts of hydrogen peroxide and/or peroxyacids, may represents a significant risk for the receiving water bodies even after dilution with the slaughterhouse waste waters. For the discharge through a WWTP low risk for the biological processes within the WWTP is expected. The risk for the waters receiving the WWTP effluent depends on the amount of remaining hydrogen peroxide and/or peroxyacids. The effluent treatment in a well managed WWTP facility is considered sufficient to minimize the environmental impacts of these acids. The remaining issue is the potential risk of HEDP and potential by-products, which cannot be addressed based on the available information.

*The presence of residues in the poultry carcasses*

- The potential residues in the carcasses have been also evaluated, on the basis that the presence of chemicals in consumer products represents a diffuse source of environmental releases. A low environmental risk from this source has been estimated for the four assessed chemicals.

*Antimicrobial resistance through the environment*

- Limited specific evidence on the potential of these treatments to produce bacterial resistance, if used on poultry carcasses, is currently available. Nevertheless, the chemicals are able to select less susceptible strains of Salmonella and some other pathogens. There is insufficient data to determine whether they may cause cross resistance to antibiotics or the selection of specific microbial groups associated to resistance.
- Sufficient information on the conditions for application of the substances for the removal of the microbial surface contamination of poultry carcasses should be available for the evaluation of the efficacy and subsequently the potential emergence of acquired reduced susceptibility to these substances and/or resistance to therapeutic antimicrobials.
- Information about intrinsic and extrinsic factors influencing the efficacy of the substances is needed from the manufacturing company.
- There is an environmental concern about the possibility that resistant strains could be disseminated or selected in the waste waters and the general environment. In addition to the human health risk, the production of bacterial resistance is relevant for the environmental impact assessment. Additional information is needed for a proper assessment of these issues and the environmental consequences. This cannot be covered in this opinion due to the lack of available information.

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